

Notice of Allowability

Application No.

10/027,919

Examiner

Edna Wong

Applicant(s)

SEITA ET AL.

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment After Final dated September 29, 2004.
2. ☒ The allowed claim(s) is/are 1-3,5-7,10,11,15 and 17-20.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

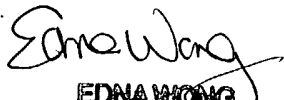
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 10/8/04.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


EDNA WONG
PRIMARY EXAMINER

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with S. Matthew Cairns on October 6, 2004.

The application has been amended as follows:

IN THE CLAIMS

Claim 2, line 1, the status identifier "(Previously Amended)" has been deleted and replaced with -- (Previously Presented) --.

Claim 11, line 1, the status identifier "(Previously Amended)" has been deleted and replaced with -- (Previously Presented) --.

Claim 17, line 1, the status identifier "(Previously Amended)" has been deleted and replaced with -- (Previously Presented) --.

Claim 19, line 1, the status identifier "(Previously Amended)" has been deleted and replaced with -- (Previously Presented) --.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Claims **1-3, 5 and 15** are allowable over the prior art of record because the prior art does not teach or suggest an electrolytic copper plating solution suitable for filling vias in a substrate with copper, the solution comprising copper, water, a water-soluble chlorine compound, a brightening agent compound having the structure represented by the formula of -X-S-Y- and a thiol-reactive compound as present claimed, esp., wherein the thiol-reactive compound is chosen from performic acid, peracetic acid, peroxypropionic acid, peroxybutanoic acid or peroxypentanoic acid.

The prior art does not contain any language that teaches or suggests the above. *Mikkola et al.* and *Lyde* do not teach a thiol-reactive compound chosen from performic acid, peracetic acid, peroxypropionic acid, peroxybutanoic acid or peroxypentanoic acid. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Claims **6-7, 17-18 and 20** are allowable over the prior art of record because the prior art does not teach or suggest a process for filling vias in a substrate by electrolytic copper plating comprising the steps of contacting, applying and maintaining as presently claimed, esp., the step of maintaining a concentration of a compound having -X-S- structure equal or less than 2.0 micro mol/L.

The prior art does not contain any language that teaches or suggests the above. *Mikkola et al.* and *Lyde* do not teach the step of maintaining a concentration of a

compound having -X-S⁻ structure equal or less than 2.0 micro mol/L. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Claims **10-11 and 19** are allowable over the prior art of record because the prior art does not teach or suggest a method for filling vias in a substrate with copper by electrolytic copper plating comprising the steps of contacting and maintaining as presently claimed, esp., the step of maintaining a concentration of a compound having -X-S⁻ structure equal or less than 1.0 micro mol/L.

The prior art does not contain any language that teaches or suggests the above. *Mikkola et al.* and *Lyde* do not teach the step of maintaining a concentration of a compound having -X-S⁻ structure equal or less than 1.0 micro mol/L. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

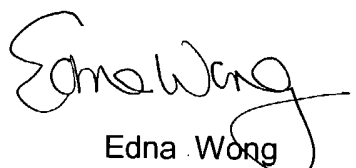
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 3:30 pm, Flex

Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Edna Wong
Primary Examiner
Art Unit 1753

EW
October 8, 2004